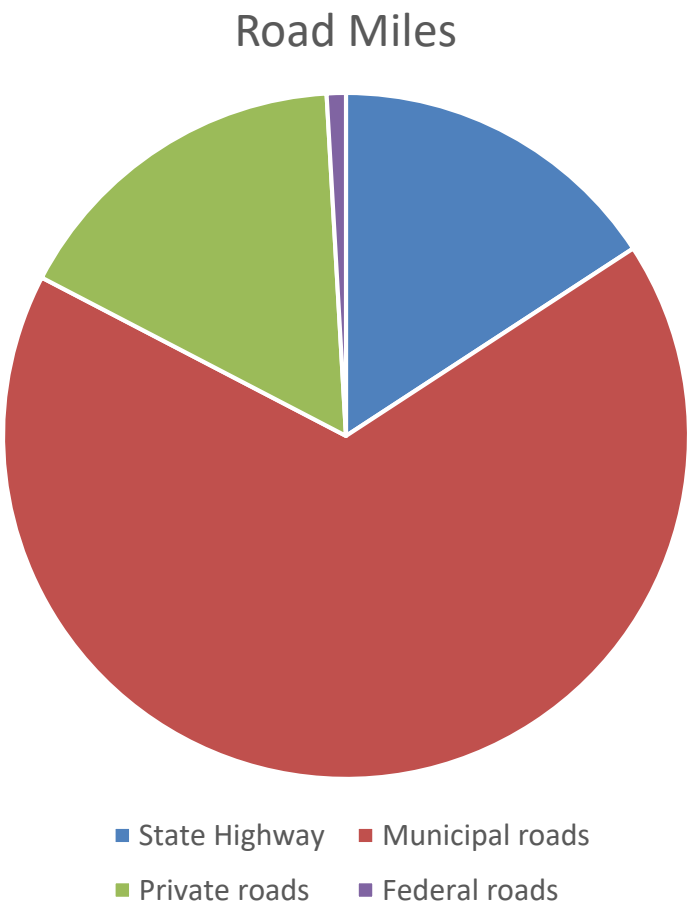
Jim Ryan

VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION
WATERSHED MANAGEMENT DIVISION
STORMWATER PROGRAM

DEC's Municipal Roads General Permit

Vermont Road Mileage

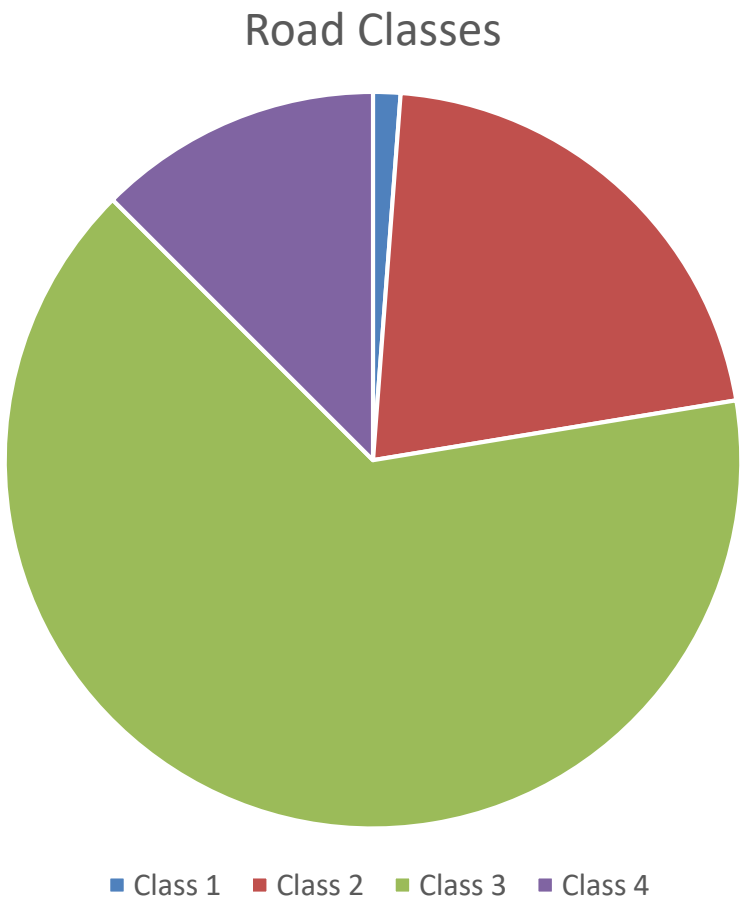


- 18,777 total road miles
- 155 miles of federal roads- 1%
- 2,709 miles of state highway- 14%
- 2,823 miles of private roads- 15%
- 13,090 miles of town highway (Classes 1-4)- 70%

Municipal Road Classes

Road Class Distribution
(annually reported to Vtrans)

- Class 1: 139 miles or 1.1%
  (VTrans and municipally- maintained)
- Class 2: 2,790 miles or 21.2%
- Class 3: 8,535 miles or 65.2%
- Class 4: 1,627 miles or 12.5%

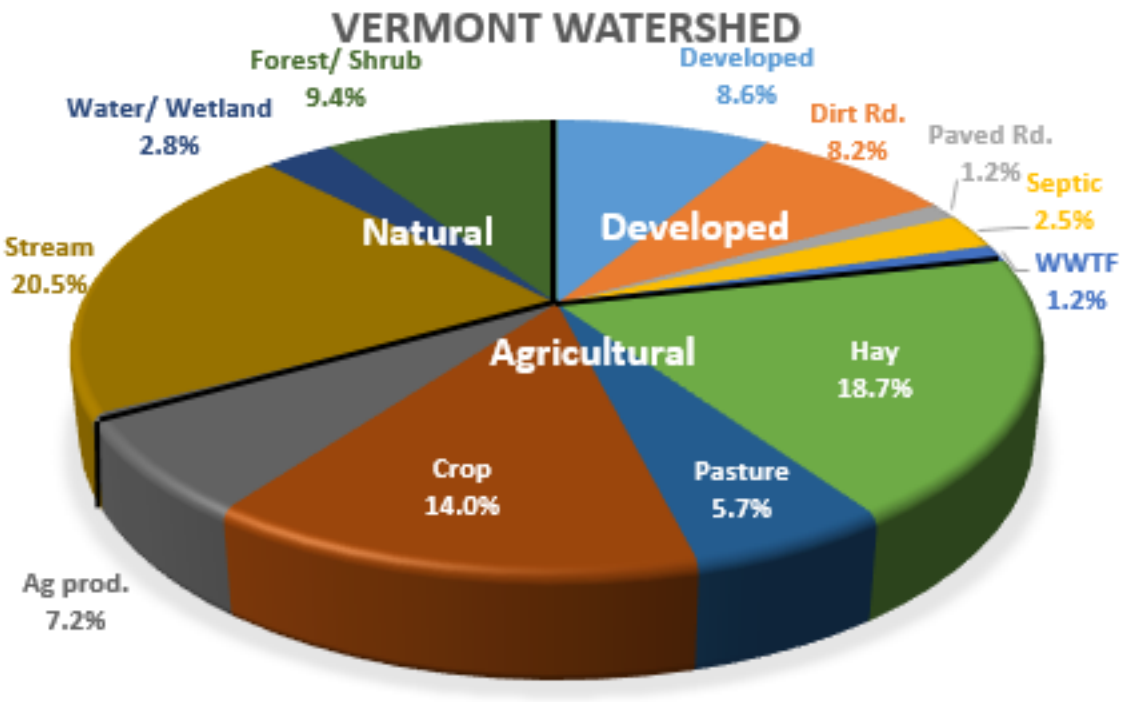


Potential Road Pollutants

- Nutrients- Phosphorus
- Sediment
- Trace heavy metals
- Hydrocarbons
- Road salt

Modeled phosphorus loading to Lake Memphremagog

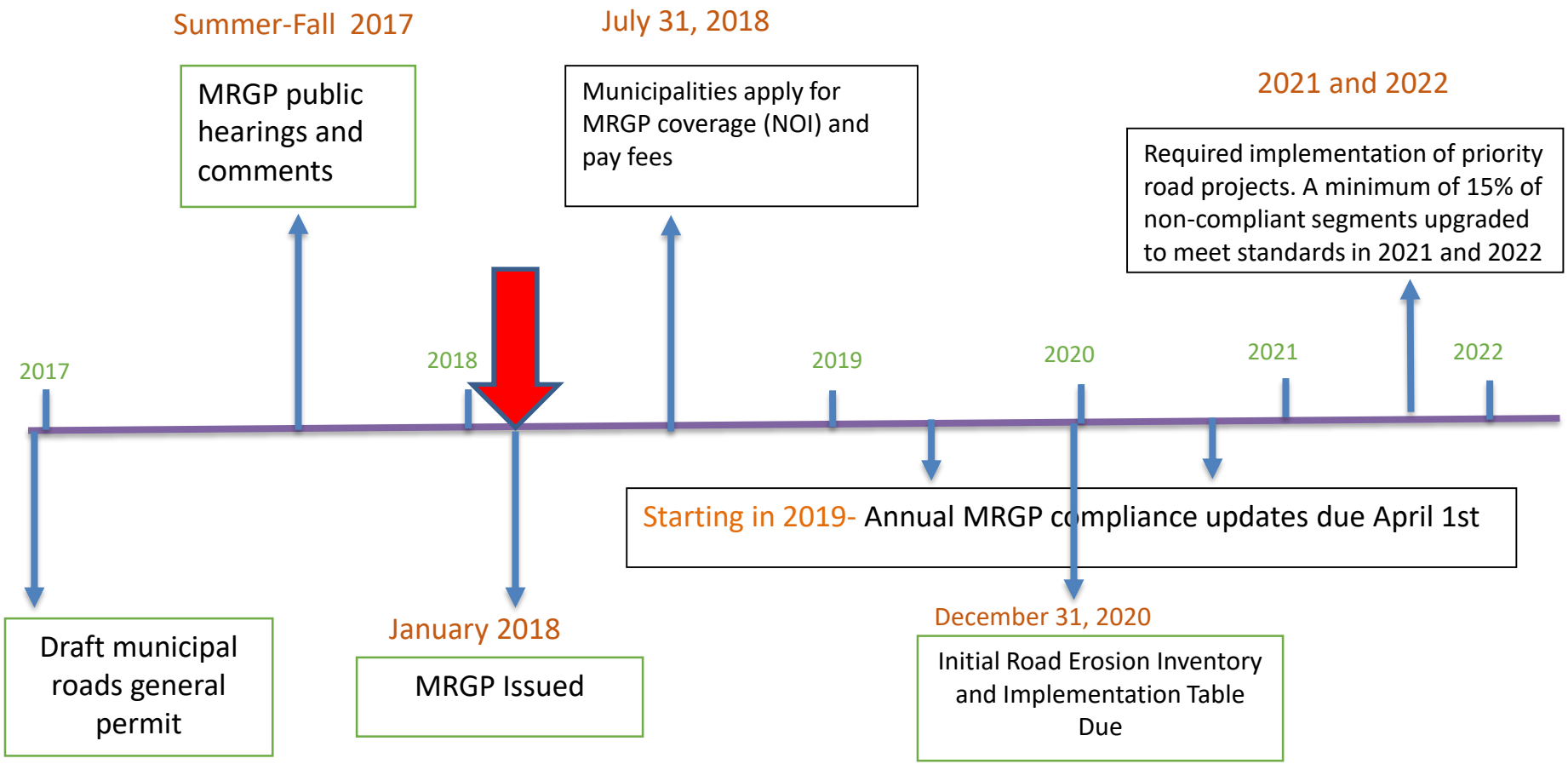
(Municipal roads approximately 6.6% of total P)



Secondary benefits: flood resilience and reducing town road maintenance and costs

Photo Credits: Beverley Wemple Wemple Bryan Pfeiffer

MRGP Timeline of Deliverables (Near Term)



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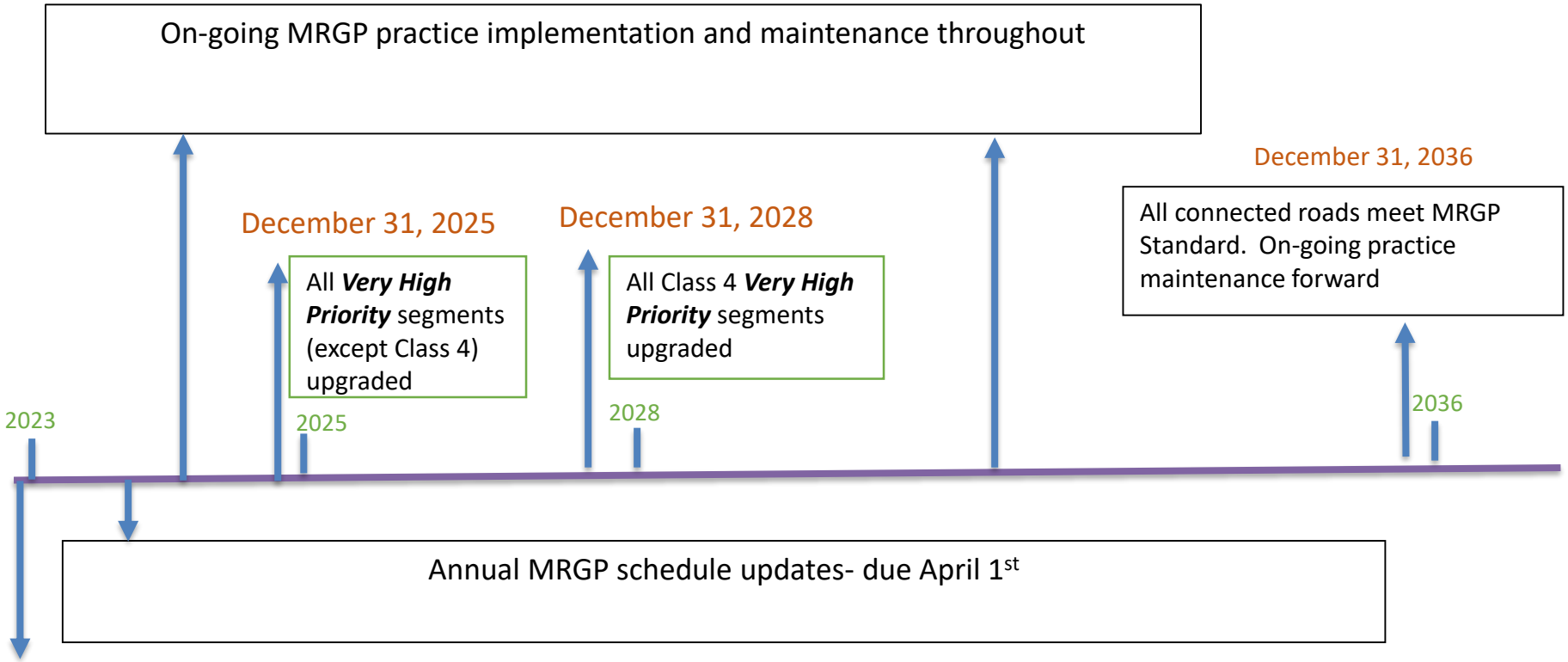
MRGP Timeline of Deliverables (Longer term)



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MRGP Coverage

Discharges of Stormwater (SW) from municipal roads including:

- Town highways, Classes 1-4
- SW infrastructure associated with town highways under the operational control of the municipality

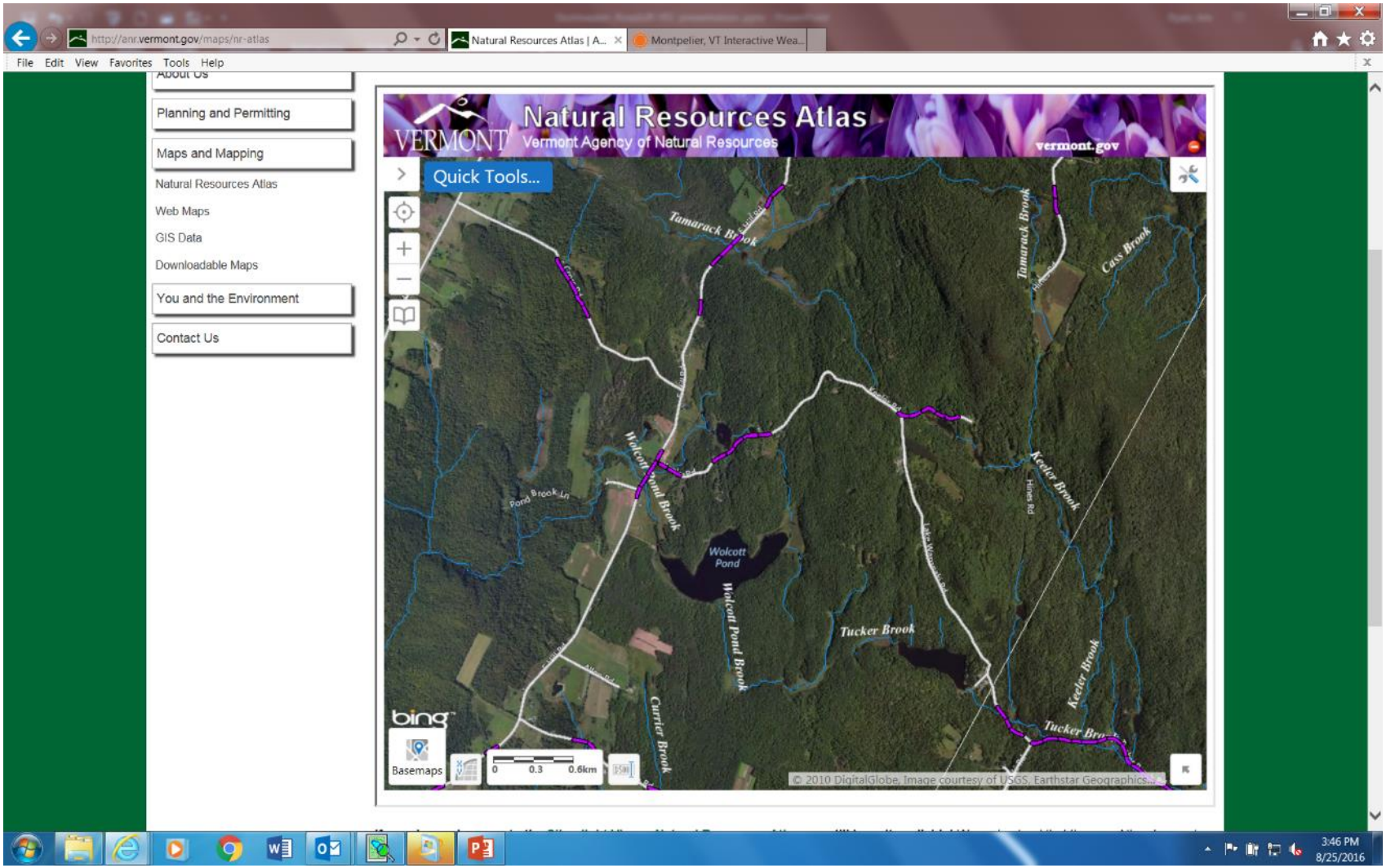
Exemptions:

- **Unorganized towns and gores exempt** from MRGP permit
- **MS4 towns-** exempt from MRGP fee and permit application but MRGP standards implementation will be required in future SW Management Plans

What is not covered by the MRGP

- Perennial stream crossing replacements or retrofits
- Road embankment streambank or lakeshore stabilization- related to stream or wave erosion
- Standard implementation considered infeasible if the implementation of that practice will trigger another state or federal permit (except non-reporting permits such as ACOE Self-Verified)

Hydrologically-connected Road Segments



Hydrologically-connected roads

Connected Criteria:

- Municipal roads within 100’ of a water resource
- Municipal road that bisects (crosses) and drains to a water resource
- Municipal road located within the DEC river corridor
- Segments can be re-classified as connected, or not connected, during the inventories
- Catch basin outfalls within 500’ of a water resource and those segments associated with those outfalls

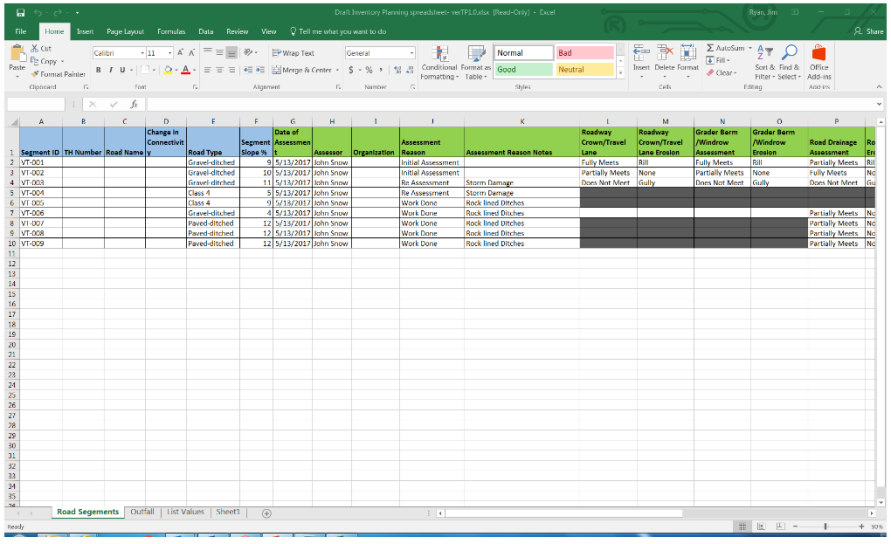
Water resources include:

- Perennial streams
- Intermittent streams
- Wetlands
- Lakes and Ponds

Road Stormwater Management Plan Components

Inventory

Prioritize- Implementation Table



Segment ID	TH Number	Road Name	Change in Connectivity	Road Type	Segment Slope %	Date of Assessment	Assessor	Organization	Assessment Reason	Assessment Reason Notes	Roadway Crown/Travel Lane	Roadway Crown/Travel Lane Erosion	Grader Berm /Windrow Assessment	Grader Berm /Windrow Erosion	Road Drainage Assessment
VT-001				Gravel-ditched	9	5/13/2017	John Snow		Initial Assessment		Fully Meets	Rill	Fully Meets	Rill	Partially Meets
VT-002				Gravel-ditched	10	5/13/2017	John Snow		Initial Assessment		Partially Meets	None	Partially Meets	None	Fully Meets
VT-003				Gravel-ditched	11	5/13/2017	John Snow		Re Assessment	Storm Damage	Does Not Meet	Gully	Does Not Meet	Gully	Does Not Meet
VT-004				Class 4	5	5/13/2017	John Snow		Re Assessment	Storm Damage					
VT-005				Class 4	9	5/13/2017	John Snow		Work Done	Rock lined Ditches					
VT-006				Gravel-ditched	4	5/13/2017	John Snow		Work Done	Rock lined Ditches					Partially Meets
VT-007				Paved-ditched	12	5/13/2017	John Snow		Work Done	Rock lined Ditches					Partially Meets
VT-008				Paved-ditched	12	5/13/2017	John Snow		Work Done	Rock lined Ditches					Partially Meets
VT-009				Paved-ditched	12	5/13/2017	John Snow		Work Done	Rock lined Ditches					Partially Meets

Implement

Road Inventory and Evaluation Form A
PAVED ROADS WITH OPEN DITCHES
GRAVEL/OPEN (DITCHED) NON-CLASS 4 ROADS

> 1 road segment = 100 meters = 328 feet
> Both sides of road = 200 meters = 656 feet
> Sheet Flow <1" erosion depth
> Rill 1"-11" erosion depth
> Gully 12"+ erosion depth

Name: **Date:**

Road Segment Name, Town Highway Number & Segment ID Number:	**ANR Atlas Slope:**	**Field Determined Slope:**	**Road Type:**
			☐ Paved ☐ Gravel

1. ROADWAY CROWN/TRAVEL LANE: *(N/A for Paved)* What percentage of the segment is properly crowned (¼" to ½" per foot), in-sloped, or out-sloped? Note if erosion is present due to poor road surface material.			**Erosion Type Present**
☐ 0%-49% (0' – 163') Does Not Meet	☐ 50%-89% (164' – 294') Partially Meets	☐ 90%-100% (295' – 328') Fully Meets	☐ Rill ☐ Gully
2. GRADER BERM/WINDROW: What percentage of the segment **(both sides of road, 200m, 656')** is the grader berm/windrow removed? (N/A for paved roads)			**Erosion Type Present**
☐ 0%-49% (0' – 327') Does Not Meet	☐ 50%-89% (328' – 589') Partially Meets	☐ 90%-100% (590' – 656' Fully Meets	☐ Rill ☐ Gully
3. ROAD DRAINAGE: What percentage of the segment **(both sides of road, 200m, 656')** is the allowed to shed in a distributed manner to a vegetated or forested filter area (shoulder lower than travel lane) or drainage ditch stabilized appropriately for the slope range below? • <5% slope: stabilized with vegetation, stone-lined, or check dams • ≥5% to <8% slope: stabilized with stone-lined ditch or combination of grass lined ditch with check dams or grass-lined ditch if installed with disconnection practices such as turnouts and cross culverts • ≥8% slope: stone-lined ditch required			**Erosion Type Present**
☐ 0%-49% (0' – 327') Does Not Meet	☐ 50%-89% (328' – 589') Partially Meets	☐ 90%-100% (590' – 656') Fully Meets	☐ Rill ☐ Gully
4. CONVEYANCE AREA/TURNOUT: Do drainage outlets/conveyance areas meet the standard of being turned out, shed in a distributed manner down the bank (shedding water), and/or stabilized with vegetation (<5% slope) or stone (≥5% slope)?			**Erosion Type Present**
☐ One or more areas does not meet standard.	☐ All areas meet standard.		☐ Rill ☐ Gully

5. & 6. DRIVEWAY & DRAINAGE CULVERTS				
A. Type of culvert?	B. Is erosion present?	C. Where in the culvert cross section is erosion present and is it rill or gully erosion? SEE CULVERT CROSS SECTION DIAGRAM		
		C1. Failing header/end treatment?	C2. Outlet scour or perched culvert?	C3. Undersized/missing structure/poor condition?
☐ Driveway ☐ Drainage	☐ No (Fully Meets) ☐ Yes (complete C)	☐ Rill (Partially Meets) ☐ Gully (Does Not Meet)	☐ Rill (Partially Meets) ☐ Gully (Does Not Meet)	☐ Rill (Partially Meets) ☐ Gully (Does Not Meet)
☐ Driveway ☐ Drainage	☐ No (Fully Meets) ☐ Yes (complete C)	☐ Rill (Partially Meets) ☐ Gully (Does Not Meet)	☐ Rill (Partially Meets) ☐ Gully (Does Not Meet)	☐ Rill (Partially Meets) ☐ Gully (Does Not Meet)
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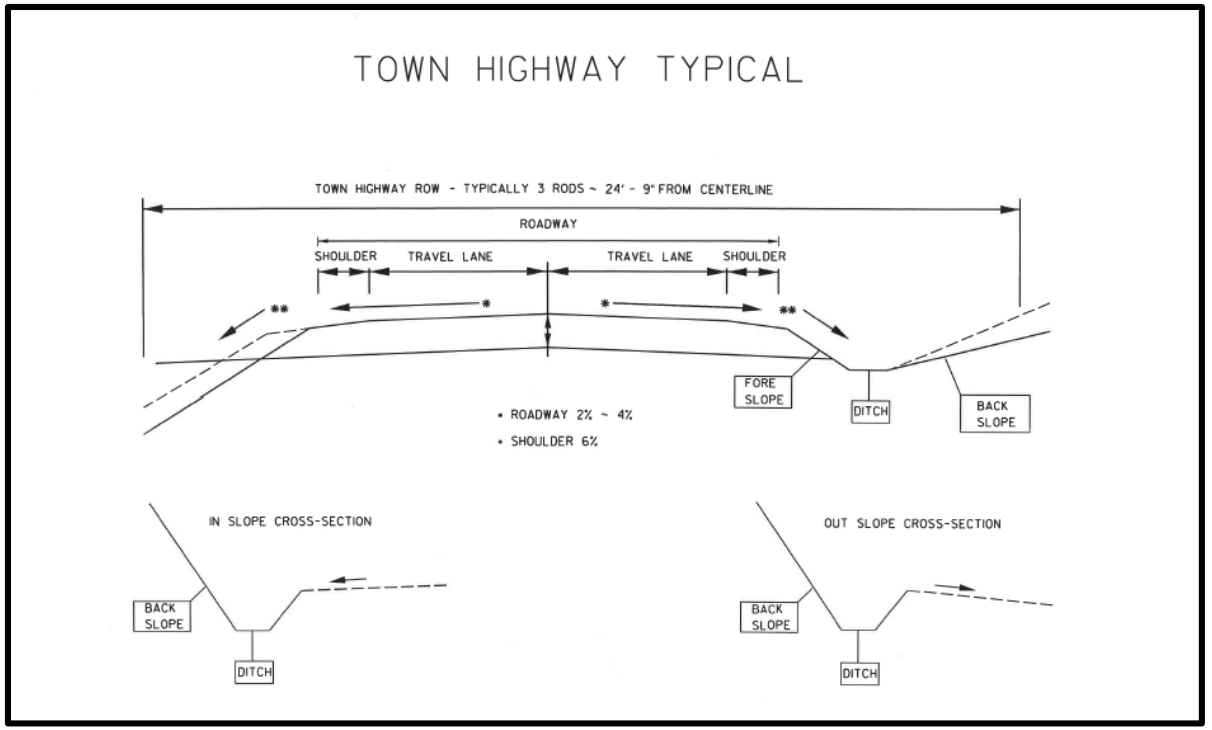
☐ Driveway ☐ Drainage	☐ No (Fully Meets) ☐ Yes (complete C)	☐ Rill (Partially Meets) ☐ Gully (Does Not Meet)	☐ Rill (Partially Meets) ☐ Gully (Does Not Meet)	☐ Rill (Partially Meets) ☐ Gully (Does Not Meet)

(Optional) IS OTHER RILL OR GULLY EROSION PRESENT?		**Check if Present in Segment and Note Linear Feet (LF)**
☐ River-road embankment erosion		☐ Historic stone walls, LF: ________

Road Erosion Inventories (REI)

Determine if MRGP standards are met by evaluating individual practices within the road cross section.



Road Erosion Inventories (REIs)

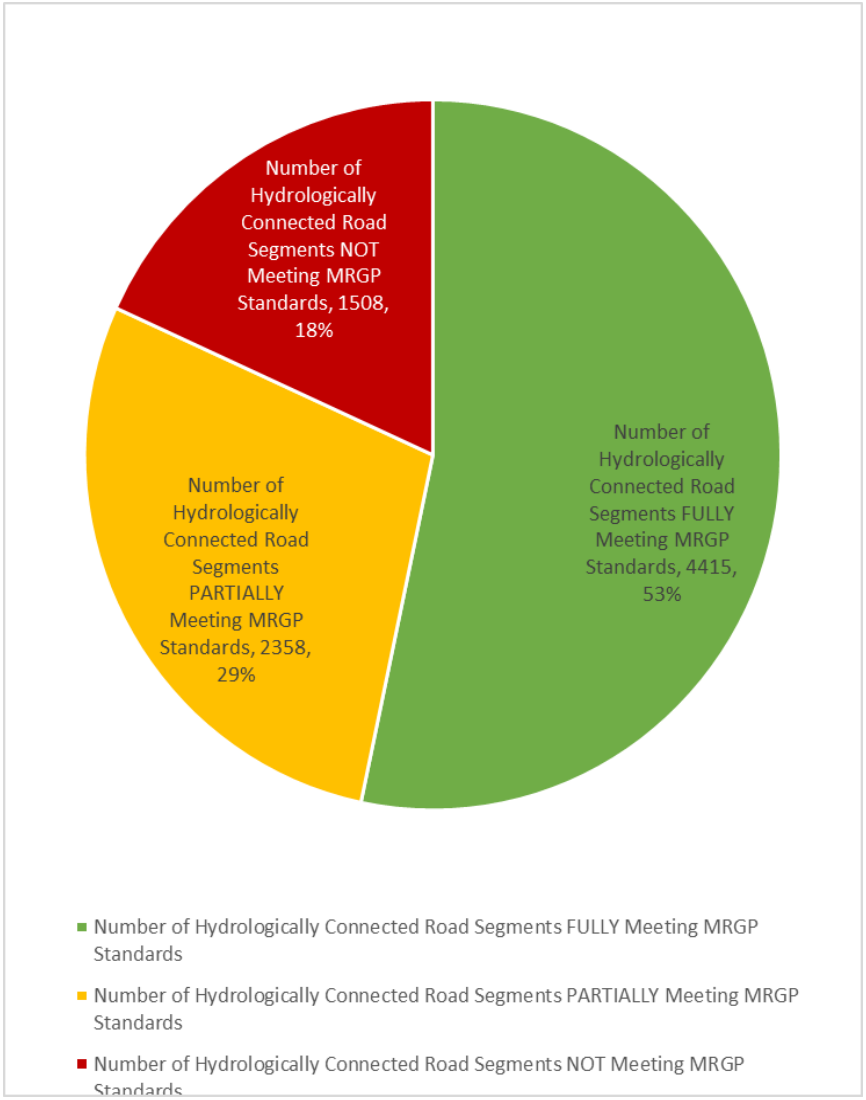
Separate REIs and standards for:

- Paved and gravel roads with ditches
- Paved roads with catch basins
- Class 4 roads

REI "scores" for each 328 foot segment:

- *Fully Meets*
- *Partially Meets* or
- *Does Not Meet*

Approximately half of connected roads already meet the MRGP Standards



Implementation Prioritization

- Towns will submit REI results and Implementation Tables by 12/31/2020

- All connected roads brought up to MRGP standards no later than 12/31/2036

Very High Priority (VHP) Segments- Criteria

Gravel and Paved Roads with Drainage Ditches:

- Does Not Meet MRGP on slopes >10%

Paved Roads with Catch Basins:

- Outfall erosion of 3 cubic yards or more

cubic yards= (length x width x depth)/27

Class 4 Roads:

- Does Not Meet MRGP (gully erosion) on slopes >10%

Very High Priority Segments- Implementation Schedule

(Gully erosion)

VHP Paved and Gravel Roads with Ditches:

- Shall meet standards by 12/31/2025

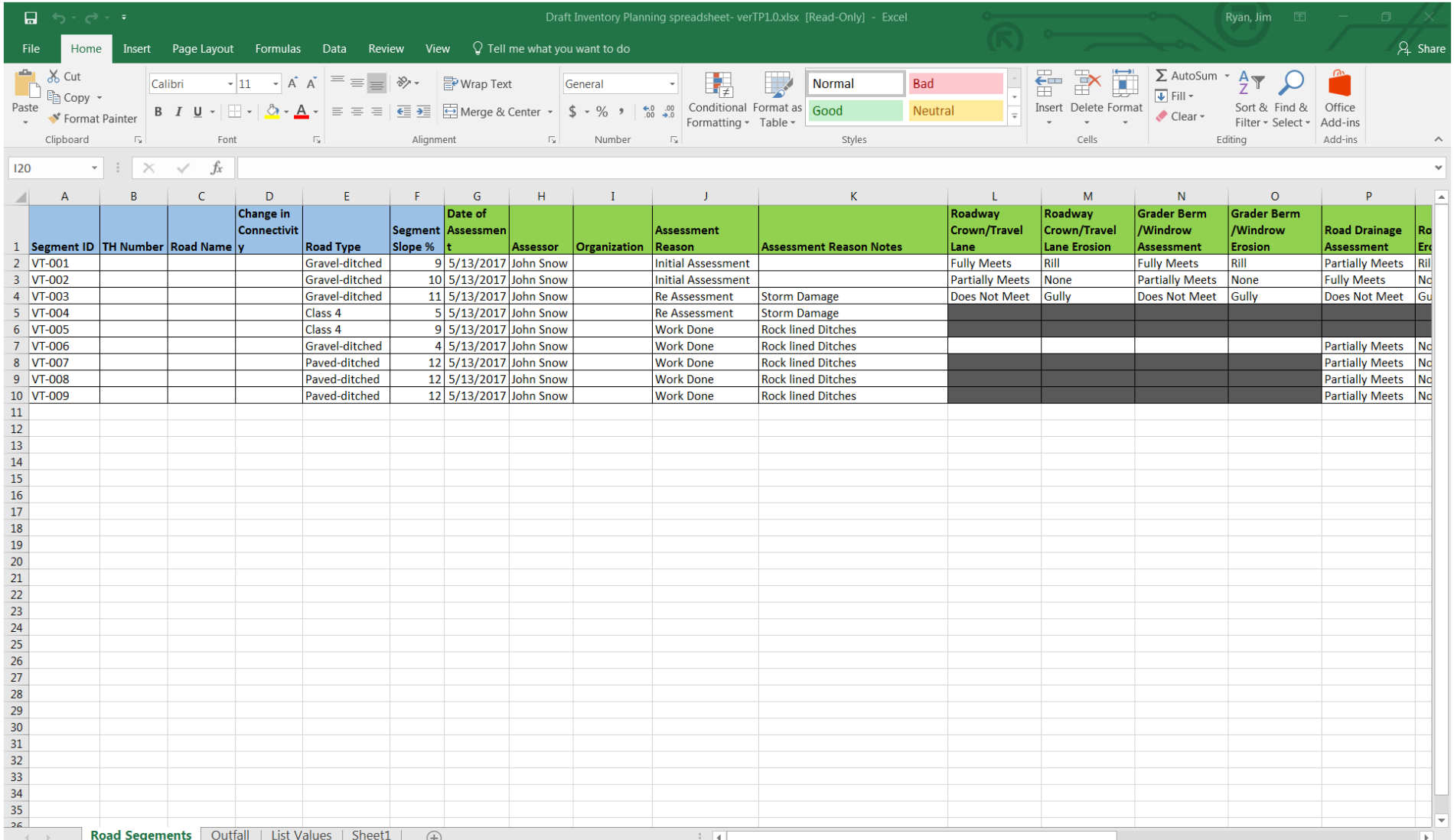
VHP Class 4 roads:

- Shall meet standards by 12/31/2028

VHP Paved Roads with Catch Basins:

- Shall meet standard by 12/31/2025

Implementation Table



Draft Inventory Planning spreadsheet- verTP1.0.xlsx [Read-Only] - Excel

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VT-009				Paved-ditched	12	5/13/2017	John Snow		Work Done	Rock lined Ditches					Partially Meets	No

Implementation Table Components

- Road Erosion Inventory (REI) results

- Connected segments ***Fully Meeting***, ***Partially Meeting***, and ***Not Meeting*** MRGP Standards-report any segment status changes

- Lists all segments upgraded to meet MRGP Standards in previous calendar year

MRGP Implementation Example

Town A. has 52 total road miles (VT average)

- 26 road miles are **hydrologically-connected** road segments
- 26 miles not considered **connected** (no BMP work needed)
- 13 **connected** road miles currently fully meet MRGP standards (maintenance of BMPs only)
- 13 remaining **connected** miles- required to be brought up to MRGP standards before 2036
- 15% of 13 miles=1.95 miles or 31.2 segments will be brought up to standards over a 2 year period 2021 and 2022

Annual Reports due April 1st- starting in 2019

- Documentation of segment upgrades during the previous calendar year

- Changes to segment compliance status

MRGP Principles

First- disconnect road Stormwater whenever possible, starting at the top of the road watershed

Second- Infiltrate stormwater

Third- Stablize conveyances and turn out ditches

Implementation “Triggers”

Required baseline standards- no matter what existing conditions are:

- Road grading/crowning
- Grass and stone-lined ditching (based on slope) or distributed flow
- Removal of grader berm
- Lowering of shoulders
- Stable turnouts

Practices are required when moderate (rill) to severe (gully) erosion present and for new construction:

- 18” drainage culvert minimum-

(DEC will provide additional culvert sizing information for intermittent streams)

- 15” drive culvert
- Culvert headwalls/headers
- Culvert outlet stabilization
- Class 4 roads- gully erosion present
- Catch basin outfall erosion

Types of Erosion

Rill erosion 1”to <12” deep

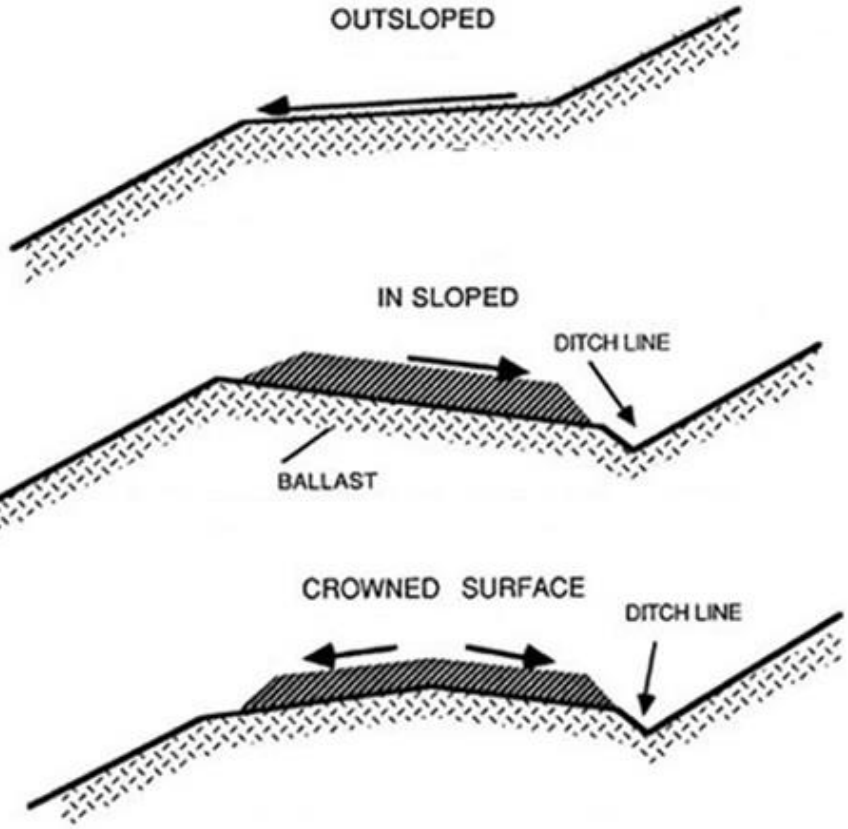
Gully erosion 12” plus

Seed and mulch or stone stabilization required for any work on connected roads

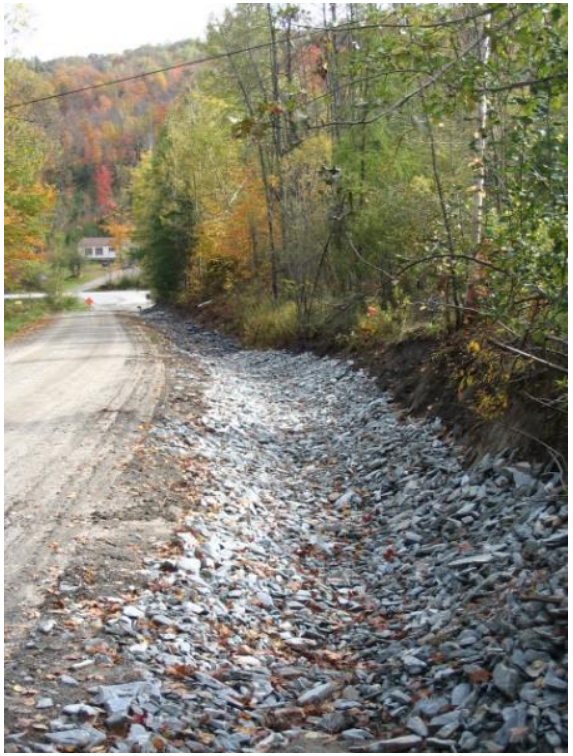
(starting this field season)

Required Baseline Standard

Road crowning



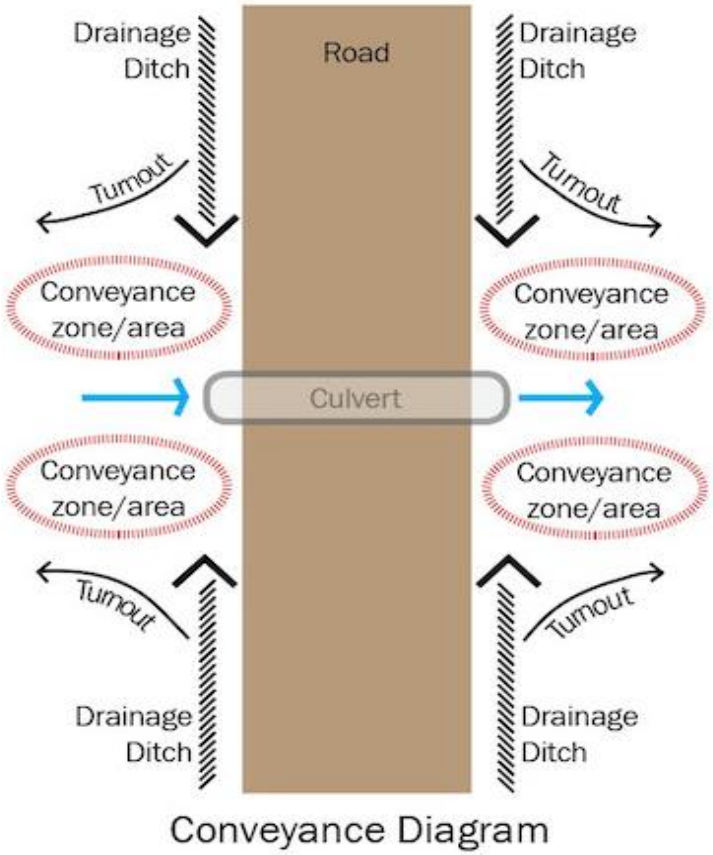
Required Baseline Standard- grass and stone-lined drainage ditches/distributed flow



Drainage Ditch MRGP Standards:

Road Drainages	Paved	Paved/Ditched	Gravel (not Class IV)	Class IV
Sheet flow (no drainage ditch) Can be substituted for grass or stone-lined ditch. Road embankment lower than road surface (no back slope)	N/A	• Distributed flow from roadway/travel lane to grass or forested area	Distributed flow from roadway/travel lane to grass or forested area	-
Drainage ditch: 0% ≤ Slope < 5%	N/A	• Grass-lined ditch	• Grass-lined ditch	-
Drainage ditch: 5% ≤ Slope < 8%	N/A	• Stone-lined ditch 8" minus minimum stone recommended **and/or** • Stone-check dams **and/or** • BMPs that disconnect water out of road drainage network (2 cross culverts or 2 turnouts per segment)	• Stone-lined ditch 8" minus minimum stone recommended **and/or** • Stone-check dams **and/or** • BMPs that disconnect water out of road drainage network (2 cross culverts or 2 turnouts per segment minimum)	-
Drainage ditches: Slope ≥ 8%	N/A	• Stone-lined ditch- 8" minus stone required. 12" minus recommended for slopes >10%	• Stone-lined ditch- 8" minus required. 12" minus recommended for slopes >10%	-

Required Baseline Standard- stable turnouts

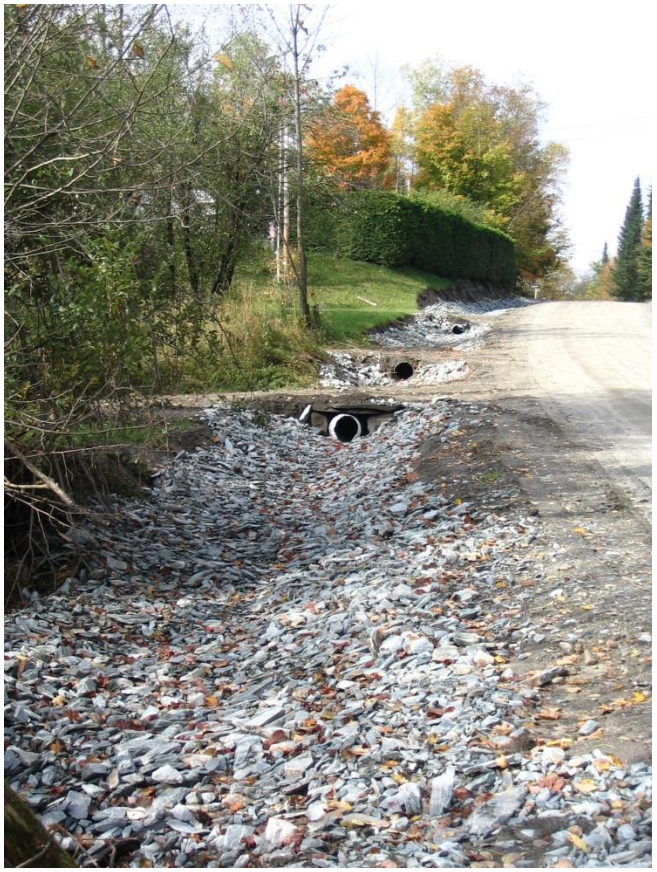


Conveyance Diagram

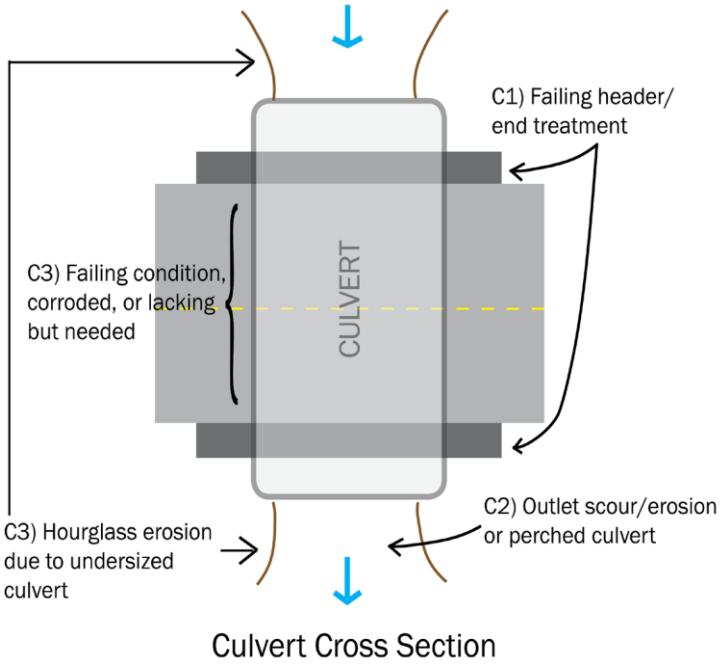
Required Baseline Standard- removal of grader berm

Distributed flow instead of a ditch

Driveway culvert erosion and remediation (within right-of-way)



Erosion from lack of culvert headwall/header



Culvert Cross Section

Culvert outlet erosion

Catch basin outlet erosion

New MRGP Fees?

Fees established through the 2015 Legislative Fee Bill

- $2,000/annual operating fee
- $400/application fee
  (once every permit cycle)
- $240/Administrative processing fee
  (twice every permit cycle- major permit amendments)

MRGP summary for municipalities:

- **July 31, 2018:** MRGP application coverage- Notice of Intent and annual fees begin
- **April 1, 2019:** Annual Reporting begins
- **December 31, 2020:** Road Erosion Inventories and Implementation Plans due
- **2021 Field season** (or sooner): Road upgrades begin
- **December 31, 2025** (or sooner): All *Very High Priority* segments brought up to standards, except Class 4's
- **December 31, 2028** (or sooner): All *Very High Priority* Class 4 roads brought up to standards
- **December 31, 2036** (or sooner): all connected roads meet MRGP standards

Assistance to towns?

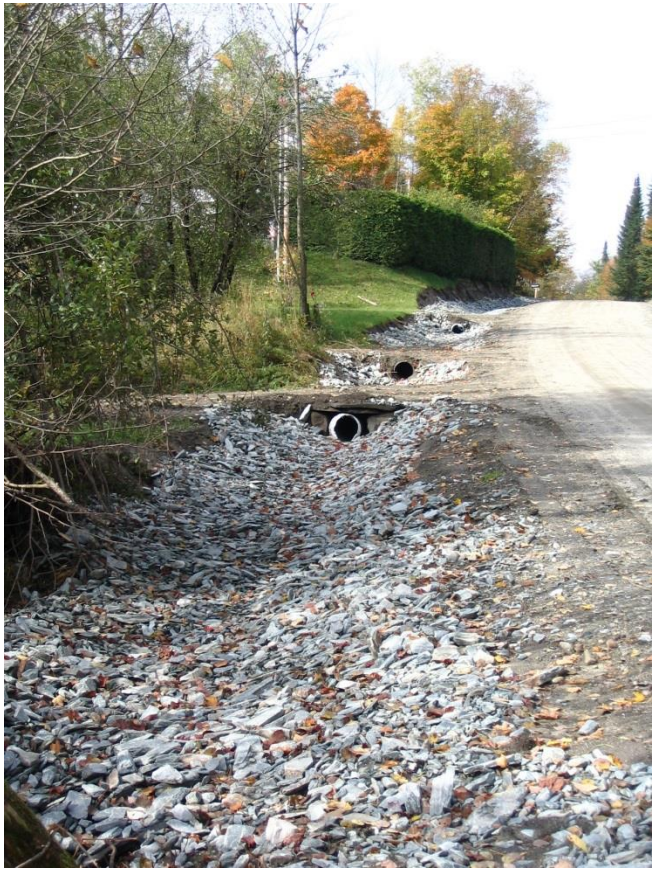
- Funding- *New* Municipal Grant-in-Aid
- Outreach and Technical assistance
- Shared Equipment

Grant in Aid- FY18 Results and FY 19 Funding

FY 18 GIA- Actual Funding:

- 186 participating towns- 70% participation
- $2.6 million in funding
- Approximately 42 road miles will be brought up to the new MRGP standards by July 1, 2018.

FY 19 GIA- Anticipated Funding: $2.9 million



For Additional Information:

http://dec.vermont.gov/watershed/stormwater/permit-information-applications-fees/municipal-roads-program#Development of Permit

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